Cost Risk Assessment (CRA)

What is CRA?

Cost Risk Assessment (CRA) is a term used to describe both a process and a broad program of risk-based assessment being conducted within Washington State Department of Transportation. The CRA is a specific application of cost and schedule uncertainty evaluation. A Cost Risk Assessment is a highly structured approach to incorporate consideration of uncertainty in project modeling and management. It is applied to the work product for a project at any stage in the project evolution from the early conceptual or planning studies, through design and eventual construction. A specific project is represented by the project team who participate actively in the CRA and who will be expected to be among the primary users, or beneficiaries, of the CRA. The background and underlying principles of uncertainty evaluation are reviewed as a basis for understanding the approach. From this perspective the applications and ;imitations of the method are discussed, along with the risks associated with misapplication of uncertainty evaluation. The need for structure, consistency and a comprehensive definition of the project scope are emphasized. As a dynamic process, a CRA may be conducted at several times during the development of a project.

CRA Applications

Cost Estimate Validation Process (CEVP®), Scope, Cost & Risk Estimate (SCoRE), and Cost Risk Assessment (CRA) Workshop are the applications to use in the Cost Risk Assessment program.

Why an Estimate is Not a Number?

- The ultimate cost (schedule or other attribute) of a project is subject to many variables that cannot all be known beforehand.
- Any one cost number represents only one possible result of the multiple variables.
- These variables are not all directly controllable or absolutely quantifiable.
- Therefore cost estimating and the cost validation process must consider probabilities in assessing cost, using a recognized, logical and tested process.

Difference between Conventional Estimating and CRA

A key difference between conventional estimating and CRA is the expression of project cost, schedule or other attribute as a distribution (range) of possible project outcomes rather than as a single number. To develop this outcome, some of the components of an estimate are described as variables. These variable components are selected to represent the “risks” or “opportunities” in an estimate and are separated from components of the estimate where uncertainty is usually (and comparatively) small, the base components.

Principal Components of the CRA

A major part of the CRA is to take a conventional project estimate and to separate out the parts of the estimate that represent base from those representing risk. The risk elements are then described in terms of their uncertain consequences and likelihood of occurrence. Three major components in the CRA application:

- Structuring the project (flowchart)
- Identifying base cost and schedule definition and validation
- Evaluating significant risks and opportunities incorporating uncertainty.

Finally, the use of the outcomes from the CRA is described. These outcomes are reports and specific data. From these results, typical applications are described that provide enhanced estimating information for:

- communications about the project
- risk management strategies
- comparative analysis of project alternatives
- financial, project and program management.